allowed to express their satisfaction with the inclusion of one of our ablest systematic workers.

The key and description for each species are given in Latin, in order that, as the author remarks, they may be available to the botanists of all nations. The parts will not be issued in any particular sequence, the only proviso being that no order will be forthcoming until at least twelve years have elapsed since it was treated either in "Die Pflanzenfamilien" or in De Candolle's "Suites au Prodromus." Each part dealing with one order will be complete in itself and will contain an index.

Apart from the memoirs incorporated in these two works, many of the studies in systematic botany, the results of which have been published in Germany within recent years, have been controlled more or less by Dr. Engler in his position as director of the Botanical Museum in Berlin. The "Flora of Africa," which has reached the twenty-third instalment, represents mainly the investigations of workers in the Berlin Museum. One of the assistants, Dr. L. Diels, has written an able memoir on the "Flora von Central China." It is especially noticeable how distant and comparatively unknown are many of the countries in which the herbaria have been formed which are finding their way to the museums in Germany. The same spirit of unflagging energy which has made famous the names of many German collectors, whose object has been to acquire fame by sending home flowers previously unknown, may here be found, but the incentive is merely scientific enthusiasm.

NOTES.

THE Huxley Memorial Tablet represented in the accompanying illustration was unveiled at the Ealing Public Library on Thursday last by the Mayor of Ealing, Alderman H. C. Green. The inscription upon the tablet is, "The Right Honourable Thomas Henry Huxley. Born at Ealing, 4th May, 1825. Died at Eastbourne, 29th June, 1895. Try to learn something about everything, and everything about something." The whole memorial was designed by Mr. Frank Bowcher, with the assistance of Prof. G. B. Howes, F.R.S. The background of the tablet is "Dove" marble; the frame, top row of lettering, wreaths and medallion are bronze; the rest of the inscription is in incised gilt letters. The movement to establish this memorial originated with Mr. B. B. Woodward, who brought it before the Ealing Natural Science Society, and a committee was formed with him as hon. secretary. Altogether about eighty subscriptions were received, mainly from Ealing residents, hence the tablet shows that the memory of Huxley is cherished at his birthplace. Among those present at Thursday's ceremony, in addition to the Mayor, were Prof. G. Henslow, Mrs. T. H. Huxley, Mr. and Mrs. Leonard Huxley, Mr. L. Fletcher, F.R.S., Mr. B. B. Woodward, and Mr. F. E. Beddard, F.R.S. (representing the Zoological Society of London). Letters regretting inability to attend were read from Prof. Howes and Lord George Hamilton. Prof. Henslow gave a short address, in the course of which he related some personal reminiscences of Huxley; and the Mayor of Ealing afterwards unveiled the tablet. The accompanying photograph having been taken before the tablet was erected, an error of the mason's, undetected at the time, but since corrected, gives the date of Huxley's death as the 25th instead of the 29th of June, 1895.

THE·RIGHT·HON·THOMAS·HENRY·HUXLEY
BORN AT EALING 4TH MAY 1825
DIED AT EASTBOURNE 25TH JUNE 1895
TRY TO LEARN SOMETHING ABOUT EVERYTHING
AND EVERYTHING ABOUT SOMETHING

WE regret to see the announcement of the death of the Rev. Dr. Wiltshire, formerly professor of geology and mineralogy at King's College, London.

THE opening meeting of the Institution of Electrical Engineers is fixed for Thursday, November 13, when the premiums awarded for papers read or published during the session 1901–1902 will be presented, and the president, Mr. James Swinburne, will deliver his inaugural address.

AT the recent conference of Colonial Premiers, a resolution in favour of the metric system of weights and measures was adopted. Referring to this action, Mr. Chamberlain has informed a correspondent that he fully recognises the importance of the matter, and is in correspondence with the Colonial Governments and the Board of Trade on the subject.

IN reply to a question in the House of Commons on Thursday last, Mr. Austen Chamberlain said:—A new cable has been laid to Belgium, and telephonic communication between London and Brussels will be opened as soon as the necessary arrangements can be completed. The establishment of communication between London and Berlin is not at present feasible.

ENERGETIC measures are being adopted at Odessa to prevent the spread of plague from the cases which have occurred there. The outbreak of the disease in May of this year is attributed to the presence of rats, which have carried the means of infection since the last case of plague was treated in Odessa in November, 1901. Systematic efforts are therefore being made to destroy the colonies of rats and carry out strict sanitary regulations.

THE chief members of the Scottish Antarctic Expedition about to start for the South Polar regions were entertained to dinner in Edinburgh on Thursday last by the president of the Royal Scottish Geographical Society, Sir John Murray. Replying to the toast proposing success to the expedition, Mr. W. S. Bruce, the leader, remarked that the work undertaken would be supplementary to that of the three expeditions already in the Antarctic, and would be largely oceanographical. The Scottish area of activity would be around that part of the Antarctic where Sir James Ross, sixty years ago, took one sounding, attaining a depth of 4000 fathoms without reaching bottom.

THE Home Secretary has appointed a committee to inquire into the use of electricity in mines and the dangers attending it, and to report what measures should be adopted in the interests of safety by the establishment of special rules or otherwise. The committee consists of Mr. H. H. S. Cunynghame, C.B. (chairman), Mr. Charles Fenwick, M.P., Mr. Archibald Hood, past president of the Mining Association of Great Britain, Mr. James Swinburne, president of the Institution of Electrical

Engineers, and Mr. W. N. Atkinson and Mr. A. H. Stokes, H.M. Inspectors of Mines. The secretary of the committee is Captain A. Desborough, H.M. Inspector of Explosives.

THE Berlin correspondent of the *Standard* announces that the International Conference on Wireless Telegraphy will be held in Berlin about the end of March or the beginning of April next. England, the United States, France, Austria-Hungary, Italy and Russia have all responded to the invitation from Germany, and have intimated that they will accept an invitation to a conference in Berlin on condition that the programme is fixed beforehand and sent with the invitation. It is hoped to draw up a programme shortly, if possible before the end of February.

THE Paris correspondent of the *Times* reports that investigations by the Lacroix expedition to Martinique have shown that the immense opening on the south-west side of the crest of Mont Pelée has grown to formidable dimensions, and the White River is choked near its source. The dangerous portion of the mountain is the south-west slope.

MR. A. W. CLAYDEN writes to direct attention to the close resemblance between recent sunset effects and those which followed the eruption of Krakatoa in 1883. At Exeter, on Friday last, he observed very high cirrus clouds which passed through the various shades of yellow and red to grey, and then changed to brown, golden yellow and vivid crimson. The double series was as pronounced as in any of the sunsets of 1883. On Sunday evening, faint cirro-stratus became visible just before sunset, exactly resembling those seen at sunrise and sunset in 1883. The afterglow on Tuesday was richer in tone than any Mr. Clayden remembers since the Krakatoa effects. It will be remembered that similar observations of remarkable sunsets since the West Indian eruptions of May last have been made elsewhere and recorded in these columns (see pp. 199, 221, 294, 390 and 540).

THE third annual Huxley memorial lecture was delivered at the Anthropological Institute on October 21 by Prof. D. J. Cunningham, F.R.S. The subject was "Right-handedness and Left-brainedness," and Prof. Cunningham referred to the general interest which it presents to all students of anthropology. So far as available evidence goes, it seems probable that right-handedness was a characteristic of man at a very early period in his evolution. It is an inherited quality in the same sense that the potential power of articulate speech in man, and of song in the bird, are inherited possessions. Investigation shows that right-handedness is due to a transmitted functional pre-eminence of the left brain, and this factor prevents an oscillation of the condition from one side to the other in those curious cases in which the right and left sides of the body are reversed and the thoracic and abdominal viscera transposed. The greater part, if not the whole, of the motor incitations which lead to articulate speech go out from the speech centre which resides in the left cerebral hemisphere. In left-handed people, the predominance of the right cerebral hemisphere is accentuated by the transference to it of the active speech centre. Left-handed people, therefore, speak from the right brain. Prof. Cunningham concluded by pointing out that before definite conclusions could be arrived at upon many aspects of the subject, it is necessary that detailed observations should be made of the development and growth-changes of the cerebral cortex of the ape and man.

THE International Conference on Tuberculosis was held in Berlin on October 22–26, about four hundred members being present at the opening ceremony. At the final meeting, the following officers were elected for the international union against tuberculosis:—President, Prof. Brouardel, Paris; vice-presidents, Prof. Andword, Christiania; Sir William Broadbent, London; Dr. Dewez, Mons; Prof. Espina y Cayo, Madrid; Prof. von Leyden, Berlin; Prof. Linroth, Stockholm; Prof. Margliano, Genoa; Prof. Schirwinsky, Moscow; and Prof. von Schrötter, Vienna. The executive committee consists of Dr. Althoff (president); Prof. Fraenkel, Berlin; Dr. Calmette, Lille; Dr. Chyzer, Budapest; Dr. Noerdam, Copenhagen; and Dr. Raw, Liverpool; with Dr. Pannwitz, Berlin, as secretary.

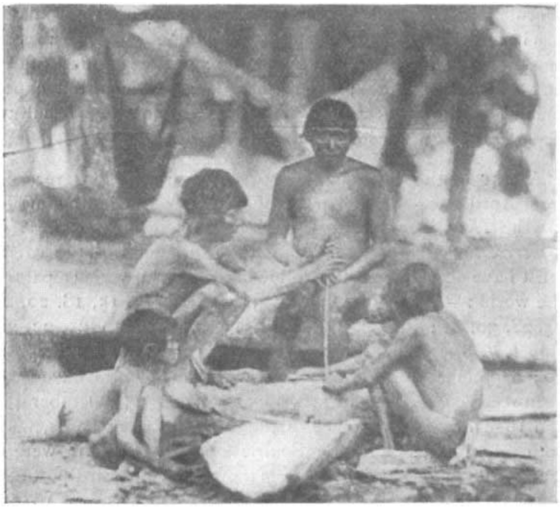
FROM a note in the *Times* we learn that a resolution of the Government of India on the report of the Imperial Bacteriologist for the past official year describes the chief work of the department for the year as the testing and production of the rinderpest serum. The experiments were directed to improving its protective quality and perfecting the process of manufacture. The results obtained at Jacobabad, Madras and Rangoon showed that the initial protective value of sera is materially diminished by exposure to high temperatures. Experiments relating to anthrax are said to have been brought to a successful issue by the discovery of a protective serum, and researches have been prosecuted into other animal diseases. A scheme recently sanctioned for enlarging the laboratory will, it is hoped, lead to the production of 100,000 doses of the serum per annum, while the plan for training veterinary assistants at the laboratory in the inoculation of cattle against rinderpest has been successful. It has been decided to discontinue the issue of fungus tubes for exterminating locusts, the results not having been successful in any of the provinces; meanwhile, investigations and experiments on the subject will be conducted in the agricultural department as well as by the bacteriologist.

A LIST of the earthquakes and volcanic eruptions recorded from April 10 to September 23 of this year has been compiled by the *New York Times* and is reprinted in the *Scientific American* of October 11. Serious disturbances of the earth's crust have occurred on the following dates in various parts of the world:—April 10, 18; May 3, 7, 8, 12, 13, 15, 18, 20, 21, 24, 28, 30, 31; June 2, 4, 6, 8, 9, 14, 15, 19, 20, 21, 22, 24; July 1, 7, 8, 9, 10, 11, 12, 17, 27; August 13, 14, 15, 25, 27, 30; September 1, 6, 8, 9, 16, 17, 22, 23. Reports have since been received of disturbances on September 25, October 4, 6 and 16–25. With reference to the last of these records, when both Mont Pelée and the Soufrière of St. Vincent were in eruption, it is perhaps worth remark that a postcard posted at Greussen was received from Herr Nobbe on October 16 predicting that disturbances would occur on October 17 and 18, not only at Martinique and St. Vincent, but also in Europe and America.

THE Odessa correspondent of the *Standard* quotes from the *Turkestan Gazette* some further details with regard to the Kashgar earthquake of August 22. It appears that the earthquake was far more disastrous than was supposed from the first accounts. The populous settlement of Nijni-Artish, lying to the north-east of Kashgar, was practically razed, many of the houses were wholly or partially engulfed in huge fissures, and 1700 persons perished. In Kashgar itself and in the immediate neighbourhood, the earthquake was less destructive to property, but 600 persons were killed. The village of Besh-Kerim, consisting of eighty houses, was entirely destroyed, with the whole of its inhabitants, in number about 550. The total loss of life is estimated at a little above 3000. Undulations of the surface, like sea-waves, were observed in the Chatar-Kula Hills; and the wooded banks of the Scharikhanskaia at Sultan-Abada are riven into immense chasms.

IN a paper read before the Institution of Mining and Metallurgy on October 16, Messrs. T. H. Leggett and F. H. Hatch collate the facts on which estimates can be based of the gold production and life of the Main Reef Series, Witwatersrand, down to 6000 feet, and then deduce what, in the circumstances, they consider to be a fair estimate. They conclude that it must be assumed that the annual production will increase for a few years to a maximum, will be maintained for a second period, and that then there will be a third period of decline. For the three years preceding the war, the average increase of production was at the rate of 4,000,000*l.* per annum, the production for 1899 having a value of about 19,000,000*l.* Allowing eighteen months from January 1, 1902, for the industry to be restored to the conditions existing in August, 1899, a similar increase of production will bring the output to at least 30,000,000*l.* per annum by June 30, 1906, and if this rate of production were to be maintained from then on, the total production of 1,233,560,709*l.* would give a life from January 1, 1902, of 42½ years. But as the production will decline gradually instead of coming to a sudden stop, this length of life will be increased, unless the annual output should for any considerable period exceed 30,000,000*l.*, when the increase in length of life due to declining output would be neutralised.

MR. C. J. WOODWARD, Municipal Technical School, Birmingham, sends us a photograph, from which the accompanying illustration has been reproduced, showing Indians in the art of producing fire by means of the fire drill. The photograph is a copy of one in the possession of Mr. Henri d'Este, and was taken in the Orinoco region of South America.



IN a recent number of the *Sitzungsberichte* of the Vienna Academy of Sciences, Dr. J. Hann contributes an important paper on the meteorology of the equator, based on observations taken by Dr. E. Goeldi, director of the museum at Pará. Very few stations exist near the equator, and especially equatorial South America; the observations now in question extend from August, 1895, to August, 1901, and, although they are still continued, Dr. Hann considers them to be of such exceptional value that he has preferred to submit them to an elaborate discussion rather than to wait for later materials. In this note we shall refer only to temperature and rainfall. The results show that the temperature is extremely uniform throughout the year; the annual variation amounts only to 1°·4 C., while the mean daily variation is 8°·8. The lowest temperature occurs in the beginning of the year, and the highest at the end of the year; from May to September the mean temperature is almost constant. The yearly mean is 25°·7 C. The rainfall is characterised by a wet season, January to April, and a relatively dry period, from May to December, although rain is somewhat frequent during the dry season. The falls occur almost exclusively in the afternoon and evening, during thunderstorm weather. The mean annual rainfall is about 102 inches.

A SURVEY of the principal changes that have occurred in the birth and death rates in Italy during the last forty years has been given by Prof. Giuseppe Sormani in the Lombardy *Rendiconti*, xxxv. 16. The principal conclusions are as follows:—The birth rate fluctuated between the limits 39·34 per 1000 in 1876 and 33·49 in 1898, while the corresponding limits of the death rate were 34·39 in 1867 and 21·87 in 1899. The fluctuations are thus seen to be less marked in the birth rate than in the death rate, but both show a downward tendency, which occurs to a great extent concurrently with the introduction of improved sanitary conditions. Still, the birth rate has in every year exceeded the death rate, the excess varying from 2·40 in 1867 to 12·80 in 1897. During the period 1862–1899, the population increased by 10,000,000. In connection with the decreased death rate, the author estimates an annual saving of eight lives per thousand in the period 1897–99 as compared with the period 1862–75. Taking account of the influence of the diminished birth rate, and assuming that the reduction of the death rate is due to progress in checking the spread of infectious diseases, it is considered that at least 200,000 people have been effectively saved from death, and that the number of those saved from illness must be at least twenty times as great.

IN "Notes on the Geology of the Eastern Desert of Egypt," by Mr. T. Barron and Dr. W. F. Hume (Dulau and Co., 1902), there are some interesting remarks on the later physical changes which the country has undergone. Attention is drawn to certain "igneous gravels" which in reality are gravels containing in places fragments of granite, gneiss and other stones derived from the Red Sea hills. They are probably Pleistocene and of earlier date than the Nile, as its bed has been cut through them and its alluvium overlies them, so that this river could not have begun to flow until late Pleistocene times. A study of the raised beaches and coral reefs affords evidence of important movements which ushered in the present conditions. During the Pliocene period, minor fault-valleys were formed, and likewise great rifts such as the Red Sea (with the invasion of the fauna of the southern seas), the Gulf of Suez and other features. Miocene strata afford evidence of the former extension southwards of the Mediterranean; Oligocene strata have not been recognised; while the earlier Eocene strata, preserved here and there from destruction by faults, point to the Eocene sea having covered the entire area examined. These Eocene strata are Londinian in age, but they comprise two series, an upper, mainly composed of limestones with nummulites, and a lower, of shales and marls. The lower series rests unconformably on Upper Cretaceous limestones, which are characterised by abundant oysters and well-marked bone-beds. Certain gypseous deposits near the Red Sea have resulted from the chemical alteration of Cretaceous and Eocene limestones. The Nubian Sandstone, which underlies the Cretaceous limestones, is also regarded as of Cretaceous (Santonian) age, and it rests on smoothed surfaces of Plutonic, volcanic and metamorphic rocks, planed down by marine erosion.

WE have received a copy of a paper by Dr. J. Beard, from the *Zoologischer Jahrbuch*, entitled "The Determination of Sex in Animal Development."

THE *Revue générale des Sciences* of October 15 contains an admirably illustrated account of a discourse on "extinct monsters" recently delivered by M. Marcellin Boule in the

Paris Museum. Among the illustrations, especial interest attaches to a reproduction of a photograph of the skeleton of *Mastodon angustidens* lately acquired by the museum, showing the remarkable downward flexure of the upper tusks and the great length of the symphysis of the lower jaw in which the lower pair are implanted. It seems certain that this species could not have been provided with a long trunk.

AMONG a batch of articles from the *Proceedings* of the U.S. Museum, attention may be directed to one by Major E. A. Mearns on the ocelot cats, of which five distinguishable forms (regarded as species) are recognised. In a second fasciculus (No. 1292), Mr. W. P. Hay describes the crustaceans inhabiting "Nickajack" Cave, Tennessee. In other parts (Nos. 1293 and 1296), Messrs. Jordan, Snyder and Fowler continue their description of Japanese fishes, treating in the former fasciculus of the blennies, and in the latter of the gorgeously coloured chætodonts and their allies.

WHEN discussing the extent to which the posterior vertebral segments of the body have been suppressed and transmuted during the evolution of man and the higher apes, Dr. A. Keith (*Journal of Anatomy and Physiology*, vol. xxx. p. 18) calls attention to the fact that naturalists are wrong in describing the larger apes as quadrupedal. They are so only when on the ground, which is not their proper habitat. When at home among the trees they carry the body upright, and may thus be called *orthograde*, in contradistinction to the lower Primates, which are *pronograde*.

THE third part of the first volume of Mr. J. S. Gardiner's "Fauna and Geography of the Maldive and Laccadive Archipelagoes" contains articles by five contributors, in addition to a continuation of the editor's general description of these islands and the coral-reefs of the Indian Ocean generally. In the first article, Prof. F. J. Bell discusses certain groups of echinoderms; in the second, Mr. M. Burr describes the orthopterous insects; while the third, by Mr. L. A. Borradaile, treats of certain crabs. The fishes of the Maldives fall to the lot of Mr. C. T. Regan, and for the identification of the turbellarian worms Mr. F. F. Laidlaw is responsible. A full notice of the work is reserved until its completion.

TO the October number of the *Zoologist* Mr. Graham Renshaw contributes an interesting series of notes on various zoological gardens. A plate, from photographs, illustrates the remarkable difference between the summer and winter coats of the addax antelope. Attention is called to the fact that the attitude generally given to the South American maned wolf in museums and figures is incorrect, the creature carrying its head very low.

IN Gegenbaur's *Morphologisches Jahrbuch*, vol. xxx. part iii., Herr L. Tobler points out that the so-called axillary bands Achselbogen) of the human subject are vestiges of the panniculus carnosus (skin-muscle) of the lower mammals.

THREE reprints from the *Yearbook* of the Department of Agriculture, and *Bulletin* No. 32 from the Bureau of Forestry in the same Department, all dealing with forestry questions, have been received. The work, mainly of supervision or providing expert advice, which is carried on by the Department is here emphasised on three distinct lines. Two of the pamphlets give working plans for forests, the one in Arkansas drawn up by Mr. F. E. Olmsted for a lumber company, and the other arranging for economic lumbering of land belonging to the University of Tennessee, on a system suggested by Mr. J. Foley. In Arkansas, 85 per cent. of the company's holding consists of pine lands, where about 50 per cent. of the trees are pines, of the varieties short-leaf and loblolly (*Pinus echinata*, *Pinus taeda*), but both furnishing timber known as yellow pine. The remaining 50 per cent. are hard woods, commercially less valuable, and it is recommended to increase the pines by leaving trees to furnish seed and to decrease the number of hard-wood trees. The cutting limit recommended for pines is 14 inches on the stump, and for hard-wood 20 inches. Mr. W. L. Hall deals with the "Timber Resources of Nebraska," and points out that not only is the amount of planted timber satisfactory, but that the natural timber is increasing both in area and density. The gain in area represents the encroachment of the forest on the prairie, particularly along the creeks and in the ravines, and may in places amount to as much as 100 acres during a period of fifty years. Pine again forms the staple product, except near water, where oak, elm and walnut thrive. "Grazing in Forest Reserves" is the title of the report by Mr. F. Roth, and this furnishes an account of the existing arrangements under which farmers may graze sheep, cattle or horses on the Government forest reserves. The success of this regulated grazing seems to be due to the simple though fairly stringent rules drawn up, combined with the level-headedness of the average American. All the reports call attention to the great damage wrought by fires, and grazers are compelled by their agreement to aid in extinguishing fires, though Mr. Roth combats the prevalent idea that many fires are to be laid to the charge of the shepherds, because fires are quite as frequent where grazing is not allowed.

AMONG the lectures to be delivered at the Royal Victoria Hall, Waterloo Road, S.E., during the next few weeks are the following:—November 4, Mr. Herbert Rix on "To Palestine and Back"; November 18, Mr. Rudler on "Volcanoes."

MESSRS. SANDERS AND CROWHURST, Shaftesbury Avenue, have sent us five lantern slides reproduced from the remarkable photographs of young cuckoos in nests, mentioned in NATURE of October 9 (p. 574). These and other lantern slides of birds and plants photographed direct from nature provide a pleasant means of creating interest in natural history.

THE first two of the three volumes of "The Elements of Physics," by Profs. Edward L. Nichols and William S. Franklin, have been revised and published as a second edition by the Macmillan Company of New York (London: Messrs. Macmillan and Co., Ltd.). The first volume deals with "Mechanics and Heat" and the second with "Electricity and Magnetism."

THE Zoological Society has just issued a new (fifth) edition of the catalogue of the Society's library in Hanover Square, prepared by Mr. F. H. Waterhouse, the librarian. The volume contains the titles of about 11,000 different works, exclusive of periodicals. The whole library contains about 25,500 different volumes. The Zoological Society is also issuing an index-volume to the *Proceedings* of their scientific meetings for the last decennial period 1891–1900, in correspondence with similar indexes for former decennial periods.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. J. D. Tannahill; a ——— Monkey (*Cercopithecus*, sp. inc.) from West Africa, presented by Mr. A. J. Lyttleton Turner; a Spotted Ichneumon (*Herpestes auropunctatus*) from Nepal, presented by Mrs. F. Cameron; a Collie's Squirrel (*Sciurus collioei*) from Mexico, a Ruffed Lemur (*Lemur varius*, var. *ruber*), a Fringed Gecko (*Unoplates fimbriatus*) from Madagascar, a Gould's Monitor (*Varanus gouldi*), three Limbless Lizards (*Pygopus lepidopus*) from Australia, deposited; a Golden Eagle (*Aquila chrysaëtus*) from Scotland, presented by Mr. J. Baxendale.